

Appl. No. 10/815,561
Amdt. Dated January 19, 2006
Reply to Final Office action of January 4, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method comprising:
forming an imprinted polymer disposed upon a substrate under conditions one of a thermal load and a vibratory load to expose a bond pad on the substrate by local flow of the polymer, wherein a recess is formed in the polymer;
attaching a solder bump to the bond pad; and
curing the polymer.
2. (previously presented) The method of claim 1, further comprising reflowing the solder bump at a process time selected from before curing the polymer, after curing the polymer, and simultaneously with curing the polymer.
3. (previously presented) The method of claim 1, further comprising filling a solder flux into the recess.
4. (previously presented) The method of claim 1, further comprising filling a solder flux into the recess by a process comprising pushing the solder flux.
5. (previously presented) The method of claim 1, wherein forming an imprinted polymer comprises forming the imprinted polymer with a convex over-all profile.
6. (previously presented) The method of claim 1, wherein forming an imprinted polymer comprises forming the imprinted polymer with a convex over-all profile, and the process further comprising:
attaching a microprocessor to the solder bump.
7. (previously presented) The method of claim 1, wherein forming an imprinted polymer comprises forming the imprinted polymer with a convex over-all profile, and the process further comprising:

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attaching a microprocessor to the solder bump, wherein attaching comprises at least partially flattening the convex over-all profile.

8. (previously presented) The method of claim 1, wherein forming an imprinted polymer comprises forming a contoured recess.

9. (previously presented) The method of claim 1, wherein forming an imprinted polymer comprises forming a contoured recess, and wherein attaching the solder bump to the bond pad includes attaching a complementary-contoured solder bump in the recess.

10. (previously presented) The method of claim 1, further comprising attaching a microprocessor with the solder bump.

11. (previously presented) The method of claim 1, wherein the polymer is formed upon the substrate by depositing a prepolymer selected from a resin, an epoxy, and combinations thereof.

12. (previously presented) The method of claim 1, wherein curing the polymer forms a cured polymer film that includes a film-to-substrate thickness ratio in a range from about one-tenth to about one-half the thickness of the substrate.

13. (previously presented) The method of claim 1, wherein the polymer is formed upon the substrate by depositing a prepolymer selected from a resin, an epoxy, and combinations thereof, and wherein curing the polymer forms a cured polymer film including a film-to-substrate thickness ratio selected from about one-tenth, one-eighth, one-fifth, one-fourth, one-third, and one-half the thickness of the substrate.

14. (previously presented) The method of claim 1, wherein the polymer is a resin that comprises a filler selected from silica, ceria, thoria, zirconia and combinations thereof.

15. (previously presented) The method of claim 1, wherein the polymer is a resin that comprises a filler selected from silica, ceria, thoria, zirconia and combinations thereof, and wherein the filler is selected from a spherical particle, an aspherical particle, a fiber, and combinations thereof.

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16. (previously presented) The method of claim 1, wherein the polymer is a resin that comprises a filler in a concentration range from about 30% to about 90%.
17. (currently amended) A method comprising:
placing a polymer film over a substrate;
imprinting the polymer film under ~~conditions~~ one of a thermal load and a vibratory load
to expose a bond pad on the substrate by local flow of the polymer film, wherein a recess is formed in the polymer film;
attaching a solder bump to the bond pad; and
curing the polymer film.
18. (previously presented) The method of claim 17, further comprising reflowing the solder bump at a process time selected from before curing the polymer film, after curing the polymer film, and simultaneously with curing the polymer film.
19. (previously presented) The method of claim 17, further comprising filling a solder flux into the recess.
20. (previously presented) The method of claim 17, further comprising filling a solder flux into the recess by a process comprising pushing the solder flux.
21. (previously presented) The method of claim 17, wherein forming an imprinted polymer film comprises forming a contoured recess.
22. (previously presented) The method of claim 17, wherein forming an imprinted polymer comprises forming a contoured recess, and wherein attaching the solder bump to the bond pad comprises attaching a complementary-contoured solder bump in the recess.
23. (previously presented) The method of claim 17, further comprising attaching a microprocessor to the solder bump.

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24. (previously presented) The method of claim 17, wherein placing the polymer film upon the substrate comprises placing a polymer film selected from a resin, an epoxy, and combinations thereof.

25. (previously presented) The method of claim 17, wherein curing the polymer film forms a cured polymer film that comprises a film-to-substrate thickness ratio in a range from about one-tenth to about one-half the thickness of the substrate.

26. (previously presented) The method of claim 17, wherein placing the polymer film upon the substrate comprises placing a polymer film selected from a resin, an epoxy, and combinations thereof, and wherein curing the polymer film forms a cured polymer film comprising a film-to-substrate thickness ratio selected from about one-tenth, one-eighth, one-fifth, one-fourth, one-third, and one-half the thickness of the substrate.

27.-29 (canceled)

30. (currently amended) A method comprising:

forming an imprinted polymer disposed upon a substrate under ~~conditions one of a~~
thermal load and a vibratory load to expose a bond pad on the substrate by local flow of the polymer, wherein a recess is formed in the polymer;

filling a solder flux into the recess;

attaching a solder bump to the bond pad; and

curing the polymer, wherein curing the polymer forms a cured polymer film that comprises a film-to-substrate thickness ratio in a range from about one-tenth to about one-half the thickness of the substrate.

31. (previously presented) The method of claim 30, wherein forming an imprinted polymer comprises forming the imprinted polymer with a convex over-all profile, and the process further comprising:

attaching a microprocessor to the solder bump.

32. (previously presented) The method of claim 30, wherein forming an imprinted polymer comprises forming a contoured recess.